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ABSTRACT

A survey was conducted of the families and teachers of 1009 students with severe disabilities from five states, to identify factors associated with their integrated educational placement. The questionnaires were designed to measure 19 variables which integration literature suggests are predictive of integrated placement. Logistic regression procedures were utilized to determine the probability of integrated placement as a function of the identified variables, which included characteristics of the student, family, school program, administration, and logistics. Three theoretical models of variables associated with integrated placement were examined, representing integration advocacy, socioeconomic status, and program/facilities characteristics. Additionally, a combined model was estimated using the strongest predictors from the three theoretical models. Within the program/facilities model, predictor variables were the integration characteristics of the Individualized Education Program, the adequacy of ancillary services, transportation adequacy, and physical accessibility. Within the socioeconomic model, parents' rating of residence in an urban community and teachers' rating of higher general community income were associated with integrated placement. Within the advocacy model, the variable most strongly associated with integrated placement was teacher advocacy for integration, followed by administrator advocacy. When all the variables from the three conceptual models were combined, six strongly correlated variables were identified. (Contains 41 references.) (JDD)

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Factors Associated with the Integrated Educational Placement of Students with Severe Disabilities[1]

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Abstract

A study, using survey methodology, was conducted to identify factors associated with the integrated educational placement of students with severe disabilities. Questionnaires were completed by the families and teachers of 1009 students from five participating states. The questionnaires were designed to measure 19 variables which integration literature suggests are predictive of integrated placement. Logistic regression procedures were utilized to determine the probability of integrated placement as a function of the identified variables which included characteristics of the student, family, school program, and community. A stepwise procedure was employed to examine three theoretical models of variables associated with integrated placement, representing integration advocacy, socioeconomic status, and program/facilities characteristics. Additionally, a combined model was estimated using the strongest predictors from the three theoretical models. Factors identified within each of the models are discussed in terms of their implications for increasing the integrated placement of students with severe disabilities.

Factors Associated with the Integrated Educational Placement of Students with Severe Disabilities

A number of investigators have reviewed the existing literature on integrated educational placement for students with severe disabilities (Halvorsen & Sailor, 1990; Meyer & Kishi, 1985). These reviews reveal several clusters of variables that have a reasonable probability of being associated with placement: student, family, instructional, administrative, and logistical issues emerge as five clusters of variables that appear to be associated with integrated placement. Empirical analysis of these five clusters of variables and their potential interrelationship, however, is lacking.

Student issues such as age, perceived extent of disability (Filler, Goetz & Sailor, 1986; Maclean & Fletcher, 1989), prevalence of challenging behavior (McDonnell, Hardman, Hightower, & O'Donnell, 1990), and the ancillary services required by the student (Filler et al., 1986; Piuma, 1985) have all been linked to placement. Filler et al. (1986), not surprisingly, found integrated settings to afford students with severe disabilities more occasions for interactions with their peers who have no identified disabilities. Most interestingly, these authors found that students with the most severe disabilities were significantly more likely to be placed in integrated educational environments than those with fewer complications, yet still classified as having severe disabilities. This finding is inconsistent with the expectation that related services may be readily available in segregated settings and is an example of why further empirical analysis is desirable.

Other research findings indicate that family attributes such as socio-economic status (Filler et al., 1986), level of involvement with their child's school program, and advocacy for their child's integrated placement (e.g., Filler et al., 1986; Halvorsen, 1983; Hamre-Nietupski, Krajewski, Nietupski, Ostercamp, Sensor, & Opheim, 1988; Hamre-Nietupski, Nietupski, & Maurer, 1990; Laski, 1985; Meyer and

Kishi, 1985; Stetson, 1984) also comprise factors which affect the level of integration placement settings for students with severe disabilities. The potential relationship among these factors, however, is still poorly understood. Families in segregated and integrated settings, for example, may both be highly involved in their children's school program. Again, further empirical analyses may yield important information about how a range of family factors may be associated with placement.

The literature also suggests that characteristics of the instructional program itself are associated with integrated placements, including variables such as staffing ratios, teacher comfort, instructional techniques, and curriculum (Brown et al., 1989a; Brown et al., 1989b). Research indicates that teacher characteristics are associated with educational placement as well. In particular, studies suggest that years of teaching experience, participation in inservice training on integration (Brinker & Thorpe, 1984, 1985; Murray & Beckstead, 1983), and teacher advocacy for integration (Filler et al., 1986; Hamre-Nietupski et al., 1988, 1990; Murray & Beckstead, 1983) are factors related to the delivery of educational services in integrated environments.

Several studies have examined certain administrative aspects of programming and related variables which affect integration. The literature suggests that these variables are associated with the importance of teacher and family advocacy and participation in inservice training opportunities (e.g., Bogdan & Biklen, 1985; Hamre-Nietupski et al., 1988; Hamre-Nietupski et al., 1990; Piuma et al., 1983; Taylor, 1982). In addition, research findings suggest that such variables as the administrator's attitude toward integration (Halvorsen, 1984; Meyer & Kishi, 1985; Pellegrini, 1986; Raske, 1979; Stainback, Stainback, & Stainback, 1988; Taylor, 1982), perceptions regarding availability of space, transportation (Halvorsen, 1984; Orelove & Hanley, 1979; Kenowitz, Zweibel, & Edgar, 1978) and ancillary services, and perceptions regarding costs (Piuma, 1985; Stetson, Etling, & Raimondi, 1982) are

likely to affect placements decisions where integration is an issue. Furthermore, initial research conducted by Brinker & Thorpe (1985) indicates that placement may be affected by state policy implementation in such areas as: a) the P.L. 94-142 funds allocated by states to local school districts for various categories of students who have severe disabilities; b) the actual categories that are subsumed under the state definition of "severely handicapped"; and c) the number of state fair hearings conducted annually on Least Restrictive Environment (LRE) issues. Earlier studies conducted by Taylor (1982) and Stetson (1984) delineated some of the critical administrative factors associated with the provision of education in integrated environments. Taylor (1982), for example, described administrative, planning, logistical and attitudinal issues related to integration. Expanding on the work of Taylor, Stetson's (1984) findings revealed several essential factors which facilitate integration in the following areas: a) appropriate service delivery; b) organizational support; c) instructional and administrative leadership; d) existence of positive attitudes; and e) community and family acceptance of integration. More recently, McDonnell and Hardman (1989) have outlined some key logistical and administrative issues affecting the process of desegregation.

The literature further suggests that certain logistical factors are associated with placement decisions where integration is an issue. In particular, the way in which local districts and counties organize to deliver services to students with severe disabilities may affect integrated placement options (California State Advisory Commission on Special Education, 1986). Furthermore, the mere existence of special "disabled only" schools has been identified as a factor associated with student placement (Finch & Landriau, 1987; Kenowitz et al., 1978). Finally, some have noted that the perception of various institutes of higher education's (IHE) involvement in process may indeed facilitate integrated options (Haring & Billingsley, 1984; Freagon,

Peters, & Costello, 1983; Laski, 1985; Piuma, Halvorsen, Murray, Beckstead, & Sailor, 1983).

As this review makes evident, a myriad of potential variables, each considered separately, appear to be associated with integrated educational placements. The interrelationships among these variables are unclear, however, and the existing data base fails to provide conceptual syntheses that may be helpful in guiding future practice and research. The present study uses survey methodology (e.g., Drew & Hardman, 1985) within a small sample of states to extend the empirical analysis of variables associated with integrated educational placement of students with severe disabilities. Based on the literature review above, 19 variables related to student, family, instructional, administrative and logistical characteristics that are likely to be associated with integrated placement were identified. The purpose of the study was to provide a preliminary analysis of those variables most strongly associated with integrated educational placement.

Method

Participants

The present study was conducted in the states of California, Colorado, Kentucky, Utah, and Virginia. After securing consent to participate from the Special Education Director within each participating State Department of Education, a random (with one exception) sampling of local and/or cooperative school districts was conducted. The Los Angeles Unified School District was deliberately selected to be surveyed because of its size (larger in pupil count than some individual states) and because of idiosyncratic features that result from its size. The number of districts or cooperative district arrangements selected was determined by an estimate of the number required to achieve a total sample of 1500 participants. For each cooperative or school district identified to participate, the special education director

or equivalent administrator was contacted to elicit his or her cooperation in the implementation of the study.

Special education administrators (i.e., program supervisors), upon being identified from the initial contacts, were interviewed by project staff and asked to participate as the first respondent group. These administrators were, in turn, asked to randomly select a specified number of teachers to serve as members of the second respondent group, with equal representation of segregated and integrated programs whenever possible (the total sample across states included equal representation of integrated and segregated programs). For the purposes of this study, an integrated placement was defined as presence on an age-appropriate regular school campus. A segregated placement was defined as presence on a school site that serves only students with disabilities. Partial mainstreaming arrangements, such as having students at a disabled-only school spending some portion of a school day on a regular education site, or visa versa, were classified as segregated for the purposes of this study. It should be noted here that the assumption of randomness in this study is constrained by several factors. While some administrators followed the direction for random selection of teachers, other administrators asked for volunteers; and even in those cases in which a random selection was made, teachers who responded to surveys always did so on a voluntary basis.

Finally, participating teachers were asked to randomly select three families of students in their class to be members of the third respondent group. Compliance by teachers with the request for random selecting could not be ascertained and exists as a further potential constraint on randomization as a control in the design of the study.

The number of administrators, teachers, and families selected to participate for each district or cooperative was determined in the following manner: special education directors were asked to estimate the number of students with severe

disabilities served in their district or cooperative. Families of one third of the total number of students were asked to respond to surveys. Since each participating teacher randomly selected three families from his or her program, the number of teachers selected was one-third of the number of families selected. For example, if a district served 100 students with severe disabilities, 33 families were asked to participate and 11 teachers. Each special education administrator who was willing to respond to the survey was asked to select from among the programs that they supervised, the number of teachers necessary to produce the targeted total.

Instrumentation

As described above, surveys were administered to three groups of individuals: special education administrators, special education teachers, and three families of students with severe disabilities who attended each of the selected programs. The surveys were designed to measure 19 variables which integration literature suggests are potentially predictive of integrated placement. Table 1 presents these variables, grouped on an ad hoc basis into five group categories: student characteristics, family characteristics, school program characteristics, administrative issues, and logistical issues. It should be noted that these categories are made up of variables grouped for organizational purposes only, rather than on the basis of empirical evidence of common variance of the individual predictors within each category.

The most common format for each survey question was an ordinal scale rating of the degree to which a variable was perceived to be present. In most cases a number of items were designed to measure a single variable. For example, teacher advocacy scores were determined from a composite of questions with a four-point rating scale for each; additionally, teacher advocacy was rated by each of the three respondent groups. Survey items included both factual knowledge (e.g., teacher

education and years of experience) and opinion (e.g., perceptions of the attitudes of others or one's own attitude). Table 1 presents the type of information sampled for each of the potential predictors of integration as well as the group(s) responding to items designed to measure each variable.

A single questionnaire was designed for administrators and another for families. Two questionnaires were developed for teachers: one designed to measure variables related to general program characteristics and administrative and logistical issues; and a second which measured variables related to characteristics of the three students whose families were selected for participation and the families themselves. Teachers completed one "general" survey and three "student-specific" surveys (one for each participating student).

Insert Table 1 about here

Procedures

Design. The research approach was an associative-correlational one. Given that a strong case exists for assuming that most of the variance in placement can be predicted from a finite number of known and quantifiable variables, a large sample regression model was selected for the design (e.g., Hanushek & Jackson, 1987).

Survey implementation. The first draft of the three sets of surveys (to be administered to special education administrators, special education teachers, and families) was submitted to representatives of the five participating State Departments of Education for review and approval. Reviews of the surveys were also solicited from members of the project advisory board and selected teachers, families, and administrators, none of whom participated in the actual survey. Implementation of the surveys was piloted in six schools in one California school

district cooperative (called SELPA in that state for "special education local plan area"), with representation from both integrated and segregated programs. Pilot surveys were returned by 48 families, 12 teachers, and two administrators.

Final revisions of the surveys were then made and the final survey instruments were sent out to participating administrators, teachers, and families. Two to three postcards prompting the return of surveys were subsequently sent to teachers and administrators. Additionally, teachers were encouraged to contact family participants in order to ensure an adequate survey return rate. Table 2 presents the number of questionnaires sent to administrators, teachers, and families by state, and the return rate. It was determined during an initial review of administrator surveys that of the special education administrators who returned the survey, often those administrators supervised ***both*** integrated and segregated programs; therefore, data from administrator surveys could not be included in the regression model. Consequently, it was necessary to drop from the analysis all predictor variables (three) measured by items on the administrator survey ***alone.*** Table 1 identifies the three deleted variables.

Insert Table 2 about here

Statistical Analysis

Data reduction. The entire data set from Colorado was excluded from the analysis because 95% of the students with severe disabilities in that state are placed in integrated educational settings. Data from students and teachers without corresponding information (i.e. family questionnaires without teacher questionnaires and vice versa) were also dropped from the analysis, yielding an effective sample size of 987 (CA = 599, VA = 83, KY = 135, UT = 170).

Altogether, 501 (51%) students in integrated schools were studied, and 486 (49%) in special schools. Table 3 presents the number of integrated and segregated students participating from each state. Although there were not enough observations to test the full logistic regression models on each state, it should be noted that students in Virginia and Utah were somewhat more likely than those in California and Kentucky to be placed in integrated settings (see Table 3; $Chi^2(3) = 9.18$, $p < .05$, $n = 987$).

Insert Table 3 about here

Because listwise deletion of missing data was used, the number of cases analyzed for each model was less then the total number of questionnaires received. There did not appear to be any systematic pattern of missing data with respect to the variable of interest, although cases deleted due to missing data were more likely to be in separate placement (58.8%) than those that were not deleted ($Chi^2 = 37.40$, $p < .001$).

Internal consistency. The variables that were measured with multiple questionnaire items were evaluated for internal consistency using Cronbach's alpha (Cronbach, 1951). Internal consistency estimates ranged from .64 for family ratings of teacher advocacy for integrated placement to .85 for teacher ratings of family involvement. In most cases, when a reliability estimate for a multiple-item variable was below .70, a single item that most closely resembled the variable of interest was selected for analysis. In some cases, a multiple-item variable with low reliability was retained if there was no single item that was deemed a good overall indicator of that variable.

Logistic regression analyses. The analyses reported here are based upon maximum likelihood logistic regression procedures. Logistic regression was used because the outcome variable of interest consisted of two categories, namely whether or not a student was placed in an integrated setting. In logistic regression, the probability that a student is placed in an integrated setting is estimated as a function of a set of predictor variables. In this article, the predictor variables are those characteristics pertaining to the student, family, school system, and community.

As in the more familiar ordinary least squares regression model, stepwise procedures can be used in logistic regression as a means of reducing the number of predictor variables to a smaller subset of "important" variables. A stepwise procedure was employed in the analyses presented here primarily because there were a large number of potential predictor variables. Using placement as the outcome variable, stepwise procedures were employed to estimate three specific regression models, namely (1) integration advocacy, (2) socioeconomic status, and (3) program/facilities characteristics.

For all three models, the full set of potential predictor variables for the three models was based upon the similarity of their content relevant to the major areas of research cited in the introduction. The selection criterion for the stepwise logistic regression analyses was set at $p < .10$, based upon t-tests of the regression coefficients. Only predictor variables attaining significance at the .05 level were included in the final analysis.

As a final analysis, an overall combined logistic regression model was estimated. For this combined logistic regression model, predictor variables that were retained in the three stepwise analyses were then examined in terms of one complete model. This strategy permitted more complete examination of the role of

integration advocacy, socioeconomic status, and program/facilities characteristics on integration.

Cross-validation of the logistic regression models. Because stepwise procedures were used in the analysis of the data, there was a risk of obtaining sample-specific, spurious results. In order to partially offset this risk, a cross-validation technique was employed (Mosteller & Tukey, 1968). For the cross-validation approach, the sample was randomly split into two parts. Stepwise procedures were performed on one random half of the data (n = 475). After the subsets of predictor variables were identified on this half of the data, the regression coefficients were then tested for significance on the second half of the data (n = 535). Predictor variables that were not marginally significant ($p < .10$) in both halves of the sample were dropped from the analysis. The models thus derived were then estimated with the entire sample.

Interpreting logistic regression results. In logistic regression analysis, a regression coefficient is estimated for each predictor variable in the regression model. The regression coefficients obtained in logistic regression are interpreted differently than those obtained in the more familiar ordinary least squares regression. In logistic regression, the regression coefficients can be interpreted directly as change in the log-odds of integrated placement per unit of change in the predictor variable. Because the predictor variables are not all measured in the same way, care needs to be taken in interpreting the regression coefficients. In particular, logistic regression is nonlinear: predictor variables will display varying effects across their range of values.

To aid in interpreting the results, the *method of first differences* (King, 1989) was chosen. To use this method, the probability that a student is placed in an integrated setting is first estimated for each student (See Hanushek and Jackson, 1977, for a description of how these probabilities are estimated). A summary

statistic, denoted as d, is then calculated for each predictor variable. The d-value for a given predictor variable represents the estimated change in the probability of a positive occurrence in the dependent variable while holding all of the remaining predictor variables constant. For example, the family rated IEP variable (see Table 4) ranges in value from 1 to 4, with an associated d-value of .402. Thus, the probability of integrated placement associated with a value of 4 (the maximum) is .402 times greater than the probability associated with a value of 1 (the minimum), with the remaining predictor variables held constant.

Insert Table 5 about here

Results

The three theoretical models constructed from variables associated with integrated placement representing socio-economic status, advocacy, and program/ facilitates characteristics, are described below. Also described is a "combined model" estimated using the strongest predictors from the three theoretical models.

Program/Facilities Model

The stepwise selection procedures described above yielded five robust predictors: family-rated IEP (integration), teacher-rated IEP (integration), family-rated ancillary services adequacy, teacher-rated transportation adequacy, and teacher-rated physical accessibility of schools ($Chi^2(5) = 131.06$, $p < .0001$, $n = 498$). It should be noted that in logistic regression the overall significance of a model is based on the Chi-square statistic. Table 5 presents the overall model statistics including Chi-square and log likelihoods. This table also includes the proportion of cases correctly classified by the model, a rough indicator of fit (Aldrich & Nelson, 1984).

Insert Table 5 about here

The most striking effects in this model are those related to IEP (i.e., the degree to which it addresses integrated placement and activities). The range of probability associated with variation in this independent variable (first difference) is .402 (see Table 3). Teacher-rated IEP (integration) resulted in highly similar predicted probabilities. Effects of both variables were highly significant (t = 5.92 and 5.71 respectively, $p < .001$; see Table 4).

Parents rated ancillary services and teachers rated physical accessibility more positively in segregated settings, but teachers were more likely to believe that transportation is adequate in integrated settings. The most pronounced of these effects was that associated with physical accessibility of facilities (t = -4.65, $p < .001$).

Socio-Economic Model

Only three independent variables were found to have reliably strong associations with integrated placement (see Table 4): residence in an urban community (family-rated), higher general community income (teacher-rated), and less severity of disability (family-rated) [$Chi^2(3) = 98.04$, $p < .0001$, n = 804]. Parents rated their children in integrated programs as being less severely disabled than parents of children attending segregated programs.

In order to examine the accuracy of this perception, the level of disability of a small sample of students in both integrated (n=31) and segregated (n=31) settings whose families had participated in the survey was rated using the Student Descriptor Scale (SDS) (Goetz, Haring, & Gee, 1989; Haring et al., in press). An examination of class rosters indicated no substantial changes from those students who attended during the regular school year. The SDS provides estimates of degree

and extent of disability in relation to nine characteristics: presence of a health impairment, upper torso motor impairment, ambulation impairment, impairment in communicative behavior, sensory functioning and environmental responsiveness, presence of intellectual disability, behavior disorder, and need for assistance in toileting. The reliability and validity of the instrument have been established (see Haring et al., in press, for discussion).

Interobserver reliability data on the Student Descriptor Scale sample data for 18 students (30%) was computed and revealed a percentage agreement score of 93%. The reliability estimate was computed by dividing the number of agreements by two independent raters across the sum of items and students, by the sum of agreements plus disagreements. Mean ratio scores for each item, for each group, are shown in Table 6.

Insert Table 6 about here

Evaluation of significant differences between groups for each item using a series of T-test analyses revealed no significant differences for any SDS indicator. Overall mean scores of 1.92 [scale: 1 (moderate) to 6 (severe)] for the segregated group and 1.70 for the integrated group suggest adequate between-group comparability in relation to the disability characteristics measured by the SDS.

Advocacy Model

Five predictors emerged from the selection procedure (see Table 4): teacher-rated advocacy for integration, family-rated teacher advocacy, family-rated administrator advocacy, teacher-rated administrator advocacy, and teacher perception that the existence of special schools "impedes the placement of students with disabilities into regular schools" [$Chi^2(5) = 260.13$, $p < .0001$, $n = 457$]. The latter

variable predicted placement negatively; agreement with the question was associated with placement in special rather than regular schools.

Teacher advocacy for integration (self-reported) proved to be the strongest predictor of the model ($\underline{t} = 6.57$, $\underline{p} < .001$), with a first difference of .724 (see Table 4). Family-rated and teacher-rated administrator advocacy for integration displayed strong effects ($\underline{t} = 5.85$, $\underline{p} < .001$ and $\underline{t} = 2.27$, $\underline{p} < .05$, respectively). Family-rated teacher advocacy displayed smaller (first difference = .391) but significant ($\underline{t} = 2.90$, $\underline{p} < .01$) effects.

Combined Model

All the predictor variables described above were combined in order to assess which among them are most strongly related to student placement in this sample [$Chi^2(6) = 226.82$, $\underline{p} < .0001$, $n = 488$].

Both family- and teacher-rated IEP (integration) continued to be strong independent predictors. Teacher-rated physical accessibility of schools continued to negatively predict integration, as did teachers' agreement that the existence of special schools impedes integration in their area. Teacher-rated teacher advocacy for integration and higher general community income continued to be strongest positive predictors of integrated placement. Teacher advocacy accounted for the greatest variability in the dependent variable probabilities ($\underline{d} = .747$), followed by community income ($\underline{d} = .505$).

Discussion

The analyses described above identified variables associated with integrated school placement for student with severe disabilities. These variables were grouped by their content into four different conceptual models. A number of critical points related to methodology should be noted: while local and cooperative school districts

surveyed were selected randomly within each state, the four states themselves were not randomly selected. Each state was a state that had a "systems change" grant from the federal government and so may introduce unknown biases into the sample. The heavy representation of California (over half the sample) clearly also influences the generality of the findings. Nevertheless, a number of findings are provocative and the models themselves may suggest fruitful lines of inquiry for future research.

Within the program/facilitation model, programs placed in regular schools were strongly associated with specific IEP characteristics (IEPs included statements addressing placement and planned interactions with nondisabled peers) and more adequate transportation (as rated by teachers). Parents rated ancillary services and teachers rated physical accessibility more positively for segregated programs. Physical accessibility of special centers would be expected as the centers were typically built or renovated under strict guidelines for accessibility. The parents' rating of more positive ancillary service delivery in segregated programs is puzzling. In actuality the adequacy of ancillary services in segregated program may, or may not, be more positive. It might be that services provided in classrooms and therapy rooms of special centers assume a more "visible" presence than services provided across classroom, school, and community settings in integrated programs. How these services are delivered, for example consultative versus direct service models, may also be a factor. The sample size and composition may have contributed to this finding in ways that are not known.

Within the socioeconomic model, parents' rating of residence in an urban community and teachers' rating of higher general community income were associated with integrated placement, although the large representation of California in the sample may influence these findings. The effect of urban residence appears to override any effects of ethnicity. Members of ethnic minority groups are more likely to live in cities, where integrated placement is more common. When

one controls for this factor and for community income, ethnicity does not appear as an explanatory factor in placement. Within the socioeconomic model, parental perceptions that students in segregated settings show increased severity of disability was examined in a follow-up validation effort.

While the sample size and selection factors limit the inferences that can be made, this small follow-up validation suggests the possibility that perception of increased severity of disability in segregated environments may, in fact, be just opinion with little or no basis in fact. The role of context in relation to parental and teacher expectations and perceptions is a complex one requiring much additional research.

Within the advocacy model, the variable most strongly associated with integrated placement was teacher advocacy for integration (according to both teacher and family ratings). Family and teacher ratings of administrator advocacy were also strongly associated with integrated placement, suggesting that teachers' and administrators' attitudes and actions for integration may be key components in the integration process.

Finally, when all the variables from the three conceptual models were combined to determine the variables most strongly correlated with integrated placement, six variables were identified. Teacher advocacy was most strongly associated with integration. Characteristics of the student's IEP (the degree to which it includes statements related to placement and integrated school and community educational activities) continued to be strongly associated with integrated programs. Teacher rating of higher general community income also emerged in the combined model.

Application of any particular finding to everyday placement decisions requires caution given the non-random sample of states and the predominance of California data. Still, the outcomes associated with the combined model are the

most robust variables identified in the current study, and do suggest that teachers may indeed be a key factor in achieving integrated placements through advocacy and through IEPs that reflect characteristics indicative of quality educational programming (see Hunt, Goetz, & Anderson, 1986).

Conceptually, the models similarly suggest that teachers may indeed emerge as crucial to the integration process, although causal factors are poorly understood and must remain speculative. The relationships between teacher advocacy and administrator advocacy, both of which emerge in the advocacy model, requires elaboration; the teacher's role in the IEP process which emerged in the programmatic model, also requires elaboration. Directional effects between advocacy and IEP characteristics remain to be determined, as does the relationship between higher community income (as perceived by the teacher) and other variables.

Finally, while the results of this study yield significant information on gross variables directly associated with placement in regular schools in those states surveyed, inferences concerning levels of actual integration and its outcomes require further research and a finer level of instrumentation and analysis. For example, integration was defined in this study as placement at a regular, age-appropriate school campus. It is well proven, however, that children with severe disabilities can be effectively "segregated" within the regular school context. This study may best be considered as an analysis of factors associated with placement as a precursor to actual integration, rather than an analysis of integrated practices. It remains for future research to examine those relationships.

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Table 1
Potential Predictor Variables

VARIABLES	TYPE OF INFORMATION SAMPLED	RESPONDENT GROUPS: FAMILY (F), TEACHER (T), ADMINISTRATOR (A)	VARIABLE NOT INCLUDED IN FINAL ANALYSIS
Student characteristics:			
1. Age.	Actual chronological age.	F	
2. Severity of disability.	Ordinal scale: communication and self-care skills.	F, T	
3. Number and type of services provided.	Checklist: possible services provided.	F, T	
Family characteristics:			
4. Socio-economic status.	Ordinal scale: yearly income and education.	F	
5. Involvement and advocacy for integration.	Ordinal scale and yes/no items: involvement in educational program and advocacy.	F, T, A	
Program characteristics:			
6. Teacher recency of training and number of years teaching severely handicapped students.	Number of years: since receiving credential and teaching severely handicapped students.	T	
7. Amount of teacher inservice on integration.	Number of hours: inservice in the past 3 years.	T	X (missing data)
8. Teacher advocacy for integration.	Ordinal scale: advocacy and positive attitude for integration.	F, T, A	
9. IEP addresses integrated placement and activities.	Yes/no items: placement and contact with nondisabled peers.	F, T, A	

VARIABLES	TYPE OF INFORMATION SAMPLED	RESPONDENT GROUPS: FAMILY (F), TEACHER (T), ADMINISTRATOR (A)	VARIABLE NOT INCLUDED IN FINAL ANALYSIS
Administrative issues:	Ordinal scale: perception of policy.	A	
10. State and/or local policy interpretation.			X (administrator surveys deleted)
11. Amount of administrator inservice on integration.	Number of hours: inservice in past 3 years.	A	X (administrator surveys deleted)
12. Administrator advocacy for integration.	Ordinal scale: advocacy for and attitude towards integration.	F, T, A	
13. Space/transportation availability.	Ordinal scale: space and transportation availability.	F, T, A	
14. Delivery of ancillary services.	Ordinal scale: adequacy of ancillary services.	F, T, A	
15. Cost feasibility of integrated placement.	Ordinal scale: rating of cost factors.	A	X (administrator surveys deleted)
Logistical issues:			
16. Governance of educational responsibility.	Category: type of governance structure.	T, A	
17. Type of community (urban, suburban, rural).	Category: urban, suburban, rural.	F, T	
18. Involvement of institutions of higher education in the integration process.	Ordinal scale: university as a resource.	F, T, A	
19. Status of existing special schools.	Ordinal scale: extent to which existing segregated schools affect integration.	T, A	

Table 2
Survey Return Rate

RESPONDENT GROUP	STATE	# SENT	# RETURNED	% RETURNED
Administrators:	California	68	67	99
	Virginia	24	17	71
	Colorado	22	14	64
	Kentucky	16	10	63
	Utah	40	40	100
	Total:	**170**	**148**	**87**
Teachers: (General)	California	542	271	50
	Virginia	79	32	41
	Colorado	73	46	63
	Kentucky	67	56	84
	Utah	95	56	59
	Total:	**856**	**461**	**54**
Teachers: (Student Specific)	California	1926	789	41
	Virginia	316	97	31
	Colorado	323	138	43
	Kentucky	268	174	65
	Utah	371	241	65
	Total:	**3204**	**1439**	**45**
Family:	California	1926	789	41
	Virginia	316	107	34
	Colorado	323	125	39
	Kentucky	268	190	71
	Utah	371	196	53
	Total:	**3204**	**1407**	**44**

Table 3
Student Placement by State

STATE		INTEGRATED	SEGREGATED	TOTAL
CA	n	296	303	599
	% state sample	49.42	50.58	100.00
	% total sample	59.08	62.35	60.69
VA	n	48	35	83
	% state sample	57.83	42.17	100.00
	% total sample	9.58	7.20	8.41
KY	n	58	77	135
	% state sample	42.96	57.04	100.00
	% total sample	11.58	15.84	13.68
UT	n	99	71	170
	% state sample	58.24	41.76	100.00
	% total sample	19.76	14.61	17.22
TOTAL	n	501	486	987
	% state sample	50.76	49.24	100.00
	% total sample	100.00	100.00	100.00

Table 4
Robust Predictor Variables by Model

VARIABLE	COEFFICIENT	STD. ERROR	t	p <	FIRST DIFFERENCE	CHANGE IN X [FROM (MIN.) TO (MAX.)]
Model 1: Program/Facilities						
Family-rated IEP (integration)	.626	.106	5.92	.001	.402	(1, 4)
Teacher-rated IEP (integration)	.596	.104	5.71	.001	.409	(1, 4)
Family-rated ancillary service adequacy	.648	.250	-2.60	.05	-.141	(0, 1)
Teacher-rated transportation adequacy	.349	.139	2.52	.05	.249	(1, 4)
Teacher-rated school physical accessibility	-.535	.115	-4.65	.001	-.334	(1, 4)
Constant	-1.708	.607	-2.81	.01		
Model 2: Socio-Economic						
Family-rated type of community	.579	.168	3.43	.01	.143	(0, 1)
Teacher-rated community income	.813	.117	6.96	.001	.540	(1, 4)
Family-rated severity of disability	.479	.080	6.06	.001	.436	(0, 4)
Constant	-3.316	.375	-8.85	.001		

VARIABLE	COEFFICIENT	STD. ERROR	t	p <	FIRST DIFFERENCE	CHANGE IN X [FROM (MIN.) TO (MAX.)]
Model 3: Advocacy						
Teacher-rated teacher advocacy for integration	1.234	.188	6.57	.001	.724	(1, 4)
Family-rated teacher advocacy for integration	.457	.158	2.90	.01	.391	(.33, 4)
Family-rated administrator advocacy for integration	1.183	.202	5.85	.001	.522	(1, 3)
Teacher-rated administrator advocacy for integration	.406	.179	2.27	.05	.295	(1, 4)
Teacher-rated special schools as barriers to integration	-.496	.145	-3.41	.01	-.356	(1, 4)
Constant	-6.425	.720	-8.93	.001		

VARIABLE	COEFFICIENT	STD. ERROR	t	p <	FIRST DIFFERENCE	CHANGE IN X [FROM (MIN.) TO (MAX.)]
Model 4: Combined						
Family-rated IEP (integration)	.574	.124	4.62	.001	.362	(1, 4)
Teacher-rated IEP (integration)	.471	.118	3.98	.001	.322	(1, 4)
Teacher-rated community income	.854	.185	4.63	.001	.505	(1, 4)
Teacher-rated school physical accessibility	-.443	.122	-3.64	.001	-.275	(1, 4)
Teacher-rated teacher advocacy for integration	1.294	.183	7.08	.001	.747	(1, 4)
Teacher-rated special schools as barriers to integration	-.741	.143	-5.17	.001	-.488	(1, 4)
Constant	-4.905	.839	-5.85	.001		

Table 5
Overall Model Statistics

Model	Log Likelihood	Chi^2	df	Prob > Chi^2	Percent Correctly Classified
1. Program/facilities	-287.854	131.06	5	.0000	72
2. Socio-economic	-508.267	98.04	3	.0000	62
3. Advocacy	-202.384	227.17	5	.0000	81
4. Combined	-213.519	227.14	6	.0000	78

Table 6

Student Descriptor Scale Mean Scores

	SEGREGATED n = 31	INTEGRATED n = 31
a. int. dis	3.02	2.69
b. health condition	1.08	1.16
c. toilet assist.	2.71	2.16
d. upper torso imp.	1.55	1.0
e. ambul. imp.	2.28	1.63
f. comm. beh. dis.	2.81	2.96
g. environ. resp.	0.86	0.78
h. sensory imp.	1.50	1.15
i. behavior dis.	1.47	1.75
	1.92	1.70